

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

**AFFYMETRIX, INC.**, a Delaware corporation,

**Plaintiff/Counter-Defendant,**

V.

**ILLUMINA, INC.**, a Delaware corporation,

Defendant/Counter-Plaintiff.

Civil Action No.: 04-901 JJF

**PUBLIC VERSION**

**ILLUMINA'S RESPONSE TO  
AFFYMETRIX'S STATEMENT OF DISPUTED FACTS IN RESPONSE TO  
ILLUMINA'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF THE  
ASSERTED CLAIMS OF THE '531 PATENT**

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## INTRODUCTION

In its Statement of Disputed Facts, Affymetrix concedes, as it must, most of the facts material to Illumina's Motion, and wholly fails to raise a *genuine* dispute as to the three facts it does not concede. Affymetrix concedes that the '126 PCT Application is prior art to the '531 patent, but makes three narrow arguments as to why it is not an anticipatory reference: (1) that one embodiment disclosed in the application (the "sectioned array") does not include a probe array within each well; (2) that the application does not disclose attaching a wafer with a plurality of probe arrays to a body, or applying a material resistant to the flow of a liquid sample so as to surround the probe arrays; and (3) that the application does not disclose exposing the probe arrays on the wafer to the spaces of the wells or creating test wells. (*See* Affymetrix Br., ¶3). By relying on these three arguments, Affymetrix concedes that the following limitations of the asserted claims *are* sufficiently disclosed in the '126 PCT Application:

- "method for making a biological chip plate;"
- "a body comprising a plurality of wells defining spaces;"
- "a wafer comprising on its surface a plurality of probe arrays,"
- "each probe array comprising a collection of probes;"
- "plurality of probe arrays . . . arranged in a spatially defined and physically addressable manner;"
- "the probes are DNA or RNA molecules;" and
- "material resistant to the flow of a liquid sample."

Ignoring these undisputed elements, Affymetrix's argument boils down to contending that *some* embodiments of the '126 PCT Application might not teach all of the elements of some of the claims, but this cannot defeat summary judgment when other embodiments do disclose them. And its arguments regarding "attaching" or "exposing" are nonsensical in light of clear

statements in the '531 patent and admissions by the Affymetrix inventors. No genuine dispute of material fact exists with respect to the anticipation of the '531 patent.

**I. THE '126 PCT APPLICATION DISCLOSES MULTIPLE EMBODIMENTS HAVING A WAFER WITH PROBE ARRAYS MATED WITH WELLS OF A BODY AS IS REQUIRED BY THE '531 PATENT CLAIMS.**

1. Affymetrix's first argument -- that "the 'sectioned arrays' of the '126 PCT Application do not include probe arrays within each well" -- does not create a genuine dispute of material fact for at least two reasons. *First*, Affymetrix's argument focuses only on the discussion of "sectioned arrays" in the '126 PCT Application, but completely ignores the discussion of partialing arrays and the depiction of Figure 7 in the application and in Illumina's motion. *Second*, the "sectioned arrays" of Figures 2 and 3 do in fact have probe arrays within wells. As a result, no genuine dispute of material fact exists as to the disclosure of this element in the '126 PCT Application.

2. Affymetrix focuses solely on the "sectioned array" disclosure of Figures 2 and 3, and does not even contest that Figure 7 discloses a wafer with a probe array associated with each well of a body.<sup>1</sup> As laid out in Illumina's opening brief, Figure 7 depicts an "array of arrays" (Item 43), which is an array that contains multiple probe arrays on its surface:

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<sup>1</sup> All the arrays of the '126 PCT Application -- "sectioned," "partialing," *etc.* -- are arrays with oligonucleotides used for hybridization that may be used for different purposes for obtaining information.

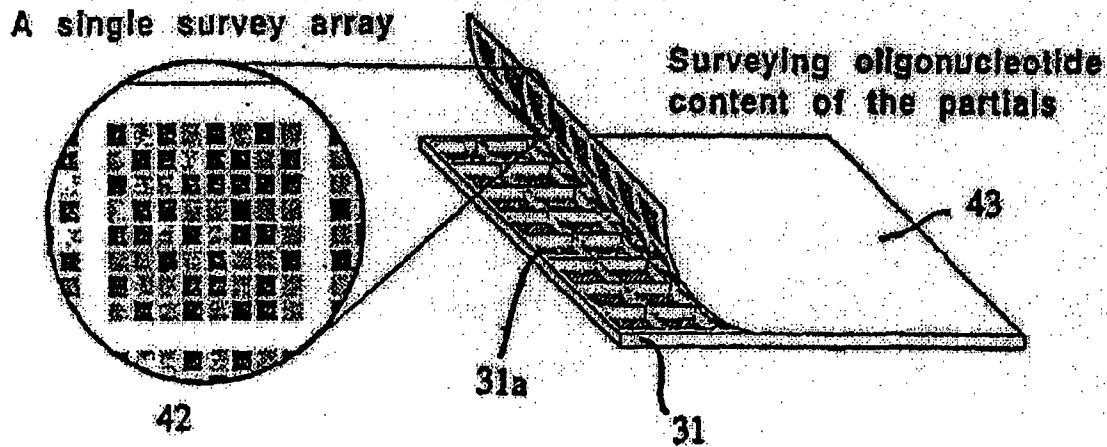


Figure 7a

Figure 7b

(See Illumina's Opening Br., Ex. 3, at IAFP13518).

3. Affymetrix does not anywhere in paragraphs 7-15 of its Statement even refer to Figure 7 of the '126 PCT Application, let alone respond to any of the points made in Illumina's opening brief regarding Figure 7. These facts are therefore undisputed:

Item 42 in Figure 7 is "a single survey array," or "miniaturized survey array," and Item 43 is a single sheet with multiple copies of the single survey array. (*See id.*, at IAFP13445 ("Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is *surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42.*") (emphasis added)) Each array of the "array of arrays" is a "miniaturized survey array," and thus may contain different elements, or oligonucleotide sequences. Item 42 of Figure 7 pictorially represents that the "single survey array" contains different elements, or oligonucleotide sequences, by employing different shades for the elements shown on it.

(See Illumina Op. Br., at 6).

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The count of 64 different elements is clearly shown in the miniature survey array (*i.e.*, Item 42) as an 8-by-8 array of 64 different elements. (*See* Illumina Op. Br., Ex. 3, at IAFP13518).

5. In addition to the undisputed teachings of Figure 7, even the embodiments of Figures 2 and 3 meet this limitation despite Affymetrix's protestations to the contrary. For instance, the "sectioned array" of Figure 3<sup>2</sup> can be divided such that the probe array in each area contains more than one oligonucleotide sequence. Figure 3 below is highlighted to illustrate how the array *is* divided into arrays that contain more than one probe sequence (and thus a probe array). Even under Affymetrix's distorted view of the '126 PCT Application, the area shaded in

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<sup>2</sup> The '126 PCT Application explains that Figure 3 shows "applying a lattice to the solid support and bonding it to the surface so that each area is surrounded by impermeable walls... The lattice members define a series of open areas which, in conjunction with support 70, define an array of wells 78." (*See* Illumina Op. Br., Ex. 3, at IAFP13432).

yellow *is* a probe array of multiple oligonucleotide sequences and *is* separated from other probe arrays by barriers (indicated in red) that are resistant to flow.<sup>3</sup>

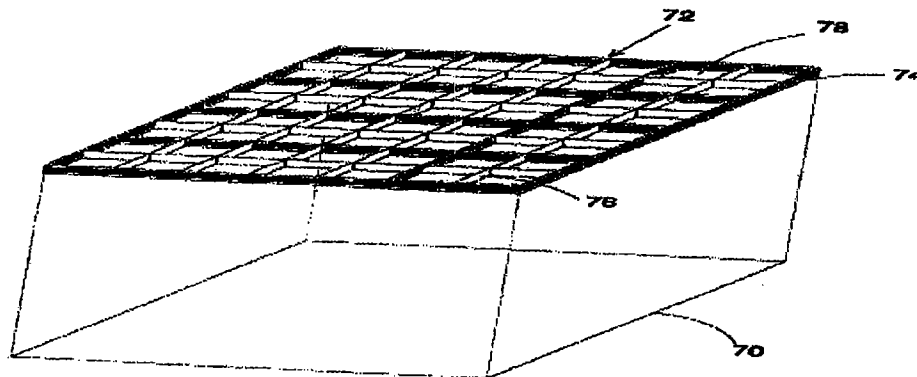


Figure 3

Accordingly, there is a probe array of four probes in the yellow-shaded section that is separated from the other probes on the surface by the red-shaded barriers, thereby creating a test well, as required by the '531 patent claims.

6. Although each probe array of the "sectioned array" highlighted above may be further subdivided, this does not preclude this embodiment reading on the asserted claims of the '531 patent -- there is no limitation in the asserted claims that precludes subdividing each of the probe arrays. (See Illumina Op. Br., Ex. 2, at col. 12, ln. 40-64).

7. Affymetrix's first argument thus fails as a matter of law: it does not create a *genuine* dispute of material fact because it ignores Figure 7 entirely, and it ignores what the '531 patent claims actually say in arguing that Figures 2 and 3 are inadequate teachings.

<sup>3</sup> This same type of illustration can be done with Figure 2 as well, showing that it does fully disclose what is required by the claims of the '531 patent.

## II. THE '126 PCT APPLICATION DISCLOSES ATTACHING A WAFER TO A BODY AS IS REQUIRED BY THE '531 PATENT CLAIMS.

8. Affymetrix next contends that the '126 PCT Application does not disclose the limitations "attaching the wafer to the body," or "applying a material resistant to the flow of a liquid sample so as to surround the probe arrays." (See Affymetrix Br., ¶16). More particularly, Affymetrix alleges that there is no disclosure of a "wafer" and a "body" being *attached* so as to prevent flow between probe arrays. (See *id.*) This argument again ignores the plain facts and does not create a genuine dispute.

9. To make this argument, Affymetrix and its expert, Dr. Robin Felder, wholly ignore the discussion of "attachment" in the '531 patent.<sup>4</sup> The following admission with respect to "attachment" in the '531 patent makes clear that it was well known how to attach a wafer to a body:

*The wafer can be attached to the body by any attachment means known in the art, for example, gluing (e.g., by ultraviolet-curing epoxy or various sticking tapes), acoustic welding, sealing such as vacuum or suction sealing, or even by relying on the weight of the body on the wafer to resist the flow of fluids between test wells."*

(See Illumina Op. Br., Ex. 2, at col. 8, ln. 16-21).

10. In addition, Figure 7 of the '126 PCT Application pictorially depicts that Item 43 (*i.e.*, the "array of arrays") is attached to Item 31 (*i.e.*, a "partialing array") such that each probe array of the "array of arrays" is aligned with a section of the "partialing array." (See Illumina Op. Br., Ex. 3, at IAFP13518).

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<sup>4</sup> Dr. Felder's conclusory opinions regarding the '126 PCT Application are insufficient to generate a genuine dispute of material fact, especially as the '126 PCT Application so clearly discloses each and every limitation of the '531 patent claims. See *Invitrogen Corp. v. Clontech Laboratories, Inc.*, 429 F.3d 1052, 1080-81 (Fed. Cir. 2005) (finding expert declaration without any reasoning or supporting evidence merely speculative and insufficient to raise any genuine issue of material fact in light of all evidence to the contrary).



11. Remarkably, Affymetrix attempts to refute this by arguing that Figure 7 does not disclose attachment because “[t]he figure itself shows the ‘survey array’ peeling back from the ‘partialing array.’” (See Affymetrix Br., ¶19). Affymetrix would be impermissibly attempting to read limitations into the claim to the extent that it implies by this argument that the “wafer” and “body” of the ‘531 patent claims must be *permanently attached* such that “peeling back” would not be feasible according to these claims. It did not raise this issue on claim construction and, in any event, the ‘531 patent specification clearly states that “attachment of a wafer to a body” can be achieved by “any attachment means known in the art,” including “relying on the weight of the body on the wafer to resist the flow of fluids between test wells.” (See Illumina Op. Br., Ex. 2, at col. 8, ln. 15-21). Moreover, the “survey array” of Figure 7 is peeled back merely to illustrate the internal structure of these two arrays.

12. Indeed, the ‘126 PCT Application discloses that the attachment of these arrays in Figure 7 allows for simultaneous, independent hybridization experiments for each probe array:

It is anticipated that surveying will be advantageously accomplished simultaneously for many or all wells of a partialing array by utilizing a sheet on which miniature survey arrays have been ‘printed’ in a pattern that coincides with the arrangement of wells in the partialing array, in a manner similar to that shown in Figures 6 and 7. Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42. *The pattern of arrays 42 corresponds to the pattern of wells 31a, whereby all wells 31a can be surveyed simultaneously.*

(See Illumina Op. Br., Ex. 3, at IAFP13445 (emphasis added), IAFP13518 (Figure 7)).

13. To allow for simultaneous, independent hybridization experiments, the ‘126 PCT Application discloses that each probe array must be separated such that fluids cannot

transfer between them. (*See* Illumina Op. Br., Ex. 3, at IAFP13428 (“A sectioned array allows for many reactions to be performed simultaneously, both on the surface of the solid support and in solution, without mixing the products of different reactions.”)).

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14. In addition, contrary to Affymetrix’s allegations, the ‘126 PCT Application does disclose techniques for preventing transfer of liquids between array sections, such as use of gels, lattice structures and depressions.<sup>5</sup> (*See* Illumina Op. Br., Ex. 3, at IAFP13432; *see also id.*, at IAFP13513-14 (Figures 2 and 3 depicting use of depressions (*i.e.*, Item 62) and a lattice framework (*i.e.*, Item 72), respectively, to prevent transfer of liquids between sections of an array)).

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<sup>5</sup> Affymetrix contends that Figures 2 and 3 are not applicable for purposes of disclosing this limitation because they disclose a “sectioned array,” which Affymetrix alleges “do[] not have a plurality of probe arrays because [they] contain only one [probe] sequence per well.” (*See* Affymetrix Br., at 11). Even assuming that Affymetrix correctly surmises that Figures 2 and 3 contain one probe sequence per well, which is not correct for reasons discussed above (*see supra*, ¶¶5-6), the ‘126 PCT Application teaches methods for dividing arrays “for preventing the exchange of materials between areas” that extend to all embodiments disclosed in the application. (*See* Illumina Op. Br., Ex. 3, at IAFP13432). This teaching thus describes the use of the lattice of Figure 7 to prevent this flow of material between areas -- this is clear from the text of the reference. After all, the whole purpose of the partialing array of Figure 7 is to allow the separate wells to be “surveyed simultaneously.” (*See id.*, at IAFP13445;

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There is no genuine

dispute of material fact that the “applying” limitation is present in the ‘126 PCT Application.

**III. THE ‘126 PCT APPLICATION DISCLOSES EXPOSING THE PROBE ARRAYS ON THE WAFER TO SPACES OF THE WELLS OR CREATING TEST WELLS AS IS REQUIRED BY THE ‘531 PATENT CLAIMS.**

16. To argue that the ‘126 PCT Application does not disclose “exposing the probe arrays on the wafer to the spaces of the wells,” or “creating test wells” (*See* Affymetrix Br., ¶23), Affymetrix first reads a limitation into the claims -- a method step of performing a hybridization reaction -- and then argues that the ‘126 PCT Application does not show how one would perform that reaction. Not surprisingly, Affymetrix’s argument fails.

17. As an initial matter, the ‘531 patent claims do not require any hybridization or experimental steps to be carried out. The ‘531 patent claims each relate to a “method for making a biological chip plate.” (*See* Illumina Op. Br., Ex. 2, at col. 12, lns. 50-61). They do not recite and do not require a hybridization reaction or any experimental reaction whatsoever. All that is required in claim 1 is that “the probe arrays are exposed to the spaces of the wells,” and in claim 3 is “creating test wells.” (*See id.*, at col. 12, lns. 50-51, 60-61). Affymetrix cannot create a genuine dispute of material fact by attempting to read in limitations and arguing that the non-existent limitation is not enabled.

18. Affymetrix does not dispute that the ‘126 PCT Application discloses an array in which the probe arrays are exposed to sections (or wells) of an array. Instead, Affymetrix questions whether Figure 7 enables one to conduct a hybridization experiment using such an array:

But neither this sentence, nor any other disclosure in the ‘126 PCT application, *explains how this supposed simultaneous survey could occur.*

\* \* \*

Even if one places the ‘survey array’ across the top of the ‘sectioned array’ as depicted in Figure 7, there is no disclosure as to how the fluids in the wells of the sectioned array would be able to interact with the ‘survey array’ -- especially without mixing of fluids between the wells.

(See *Affymetrix Br.*, ¶23, 25).<sup>6</sup> In this very statement, Affymetrix admits (as it must) that Figure 7 shows that the different arrays (42) of Item 43 are exposed to the spaces of the wells.

19. Moreover, it is undisputed that the ‘126 PCT Application discloses how to section an array to resist the transfer of fluids between sections.<sup>7</sup> (See *supra*, ¶14; see also *Illumina Op. Br.*, Ex. 3, at IAFP13428 (“A sectioned array allows many reactions to be performed simultaneously, both on the surface of the solid support and in solution, without mixing the products of different reactions.”). Affymetrix does not introduce evidence or even argue otherwise. And this is all the ‘531 patent claims require. (See *Illumina Op. Br.*, Ex. 2, at col. 12, ln. 40-51 (“ . . . attaching the wafer to the body so that the probe arrays are exposed to the spaces of the wells.”)).

20. Nonetheless, the ‘126 PCT Application does disclose use of an array that is sectioned with a lattice structure during hybridization. (See, e.g., *Illumina Op. Br.*, Ex. 3, at IAFP13432 (disclosing how to use an array that is sectioned “according to this invention . . . to increase the specificity of hybridization of nucleic acids to the immobilized oligos.”)). Also, the

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<sup>6</sup> Although anticipation under 35 U.S.C. § 102 requires that a prior art disclosure is enabling, it does not require actual performance of suggestions in a disclosure, only that those suggestions be enabled to one skilled in the art. See *Novo Nordisk Pharms., Inc. v. Bio-Technology Gen. Corp.*, 424 F.3d 1347, 1355-56 (Fed. Cir. 2005) (holding that disclosure in prior art reference was sufficiently enabling). Accordingly, Affymetrix’s contention that Drs. Chetverin and Kramer did not make an array is irrelevant to the inquiry of whether the ‘126 PCT Application anticipates the ‘531 patent claims. (See *Affymetrix Br.*, ¶4).

<sup>7</sup> Affymetrix contends that the ‘126 PCT Application “contains *no disclosure* of how to construct what they describe a ‘survey array’ . . . .” (See *Affymetrix Br.*, ¶17 (emphasis added)). This is obviously wrong. Indeed, Affymetrix acknowledges immediately thereafter that the ‘126 PCT Application references an article published by Affymetrix’s founder and CEO as disclosing “[a]utomated photolithography techniques *for preparing miniature oligo arrays*,” such as used on a “survey array.” (See *id.* (emphasis added)). Affymetrix contends that this article provides an enabling disclosure.

'126 PCT Application discloses surveying a "partialing array," as disclosed in Figures 6 and 7. (See *Illumina Op. Br.*, Ex. 3, at IAFP13443-45 ("Then the contents of each well 31a of the partialing array 31 is surveyed using a survey array 42, as is described above in Section IV.")).

21. Furthermore, it was known at the time that Drs. Chetverin and Kramer submitted the '126 PCT Application how to conduct hybridization experiments with arrays.

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22. Affymetrix's third and final argument for denying summary judgment thus also falls flat. Not only does Affymetrix concede that Figure 7 discloses the "exposing" limitation, but it fails to create a *genuine* dispute of material fact that the '126 PCT Application does not enable this limitation even under Affymetrix's belated attempt to read in a limitation requiring a hybridization step. In particular, it ignores that the '126 PCT Application discloses use of a sectioned array in a hybridization experiment, and that hybridization techniques with an array were known at the time the '126 PCT Application was submitted.

### CONCLUSION

For the foregoing reasons and those set forth in its opening briefing, Illumina respectfully requests that the Court enter summary judgment of invalidity of the '531 patent for anticipation under 35 U.S.C. § 102 in view of the '126 PCT Application.

Dated: August 4, 2006



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# **EXHIBIT 1**

**EXHIBIT REDACTED  
IN ITS ENTIRETY**



# **EXHIBIT 2**

**EXHIBIT REDACTED  
IN ITS ENTIRETY**

**CERTIFICATE OF SERVICE**

I hereby certify that on this 16<sup>th</sup> day of August, 2006, I caused to be electronically filed the foregoing document, **REDACTED VERSION OF THE ILLUMINA'S RESPONSE TO AFFYMETRIX'S STATEMENT OF DISPUTED FACTS IN RESPONSE TO ILLUMINA'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF THE ASSERTED CLAIMS OF THE '531 PATENT**, with the Clerk of the Court using CM/ECF which will send notification of such filing to the following:

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